

10.0 CLASS I WELL DESIGN AND CONSTRUCTION

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The design of the proposed disposal well is based on a maximum injection rate of 400 gallons per minute of waste water that is slightly corrosive. The design incorporates the use of a corrosion resistant "Douline" fiberglass liner or equivalent in the tubing. The packer, on/off tool, and wellhead will be coated with a corrosion resistant coating to insure integrity and long life of the system.

10.1. General Construction

The proposed total depth of the well will be 5100 ft. A detailed well schematic is shown in Figure 39. Details of the proposed wellhead are presented on Figure 40. A surface hole will be drilled to a depth of 1300 feet. The surface casing will be set and cemented to the surface to protect and isolate the fresh and slightly salty water-bearing sands.

After pressure testing the surface casing, drilling will continue to a depth of approximately 3500 feet. Lost circulation while drilling is not expected to be a problem. Mud weight will probably not exceed 9.6 ppg. A conventional core barrel will be used to core a section of the overlying shale for the Yegua. If conventional core recovery is not practical, then sidewall cores will be substituted.

A conventional core barrel run will also be made in a selected portion of the Yegua. Once this coring is successfully completed, the well will be drilled to a total depth of 5100 feet. Specific geophysical surveys will be run not only at total depth, but also at the surface casing point and possibly before the first core point.

The protection casing will be carbon steel pipe designed to be run and cemented to total depth. The protection casing will be cemented to surface in one or two stages depending on hole conditions.

After the protection casing has been cleaned out to bottom, and 2% KCL water has been circulated in, the injection zone will be perforated using shaped jet charges. The injection zone will then be swabbed to clean up the perforations and to obtain a representative formation fluid sample for analysis and compatibility studies. If necessary, the formation may be nitrogen jetted to clean up the perforations.

The drilling, logging and testing will be conducted in accordance with the procedures described in succeeding sections of this report and in compliance with the state regulatory requirements for Class I injection wells.

Drilling and completion of the well is expected to take about 25 days.

The state regulations regarding underground injection of wastewater, require protection of the potentially usable groundwater which is defined to contain less than or equal to 10,000 mg/l of total dissolved solids (TDS). The depth and overall design of the injection well was intended to comply with these regulations.

A well plan outline is shown in Table 19.

TABLE 19

WELL PLAN OUTLINE

Well: URI, Inc.

Total Depth +/- 5,100 feet

Elevation: 610 feet above sea level

	Depth Feet	Hole Size (inches)	Casing		Mud Wt. Lb/Gal.	Type of Evaluation Survey	Remarks
			Size (inches)	Depth (feet)			
- 95 -	+/- 60	-	16	+/- 60	-	None	Drive Pipe
	+/- 1300	14-3/4	10-3/4	+/- 1300	8.8-9.0	I.E., Caliper	Below Potable Water
	+/- 5100	9-7/8	10-3/4	+/- 1300	9.0-9.5	--	Top off Yegua
	+/- 3500	7-1/2	10-3/4	+/- 1300	9.0-9.5	G/R Correlation	Diamond Core 40'
	+/- 5100	9-7/8	7	-	9.5-10.0	Dual Induction, G/R-Neutron, Density, Caliper	Casing set and cemented thru disposal zone
	+/- 5070	9-7/8	7	-	+ 9/0 brine	Cement bond, G/R Collar locator	Perforated selected interval
	To surface						
	+/- 5070	9-7/8	7	-	+ 9.0 (formation fluid)	Radioactive Tracer BHP Surveys	Clean up well and run injection test.
	+/- 3575						